Aryana Nurisa. 2016, Pengaruh Variasi Kombinasi Konsentrasi Sukrosa, Eritrosa-4-fosfat dan Fenilalanin Terhadap Biomassa dan Kadar Flavonoid Kultur Kalus Daun Sambung Nyawa (*Gynura procumbens* Merr.)
Tesis ini dibawah bimbingan: Dr. Y. Sri Wulan Manuhara, M.Si dan Dr. Alfinda Novi Kristanti, DEA, Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga, Surabaya

ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh variasi konsentrasi sukrosa, eritrosa-4-fosfat dan fenilalanin terhadap biomassa dan kadar flavonoid kalus daun sambung nyawa (*Gynura procumbens* Merr.) secara *in vitro*. Penelitian ini bersifat eksperimental dengan desain rancangan acak lengkap. Konsentrasi sukrosa sebesar 10 g/L, 30 g/L dan 50 g/L masing-masing dikombinasikan dengan eritrosa-4-fosfat (0 µM, 2,5 µM dan 5 µM) dan fenilalanin (0 mg/L, 2 mg/L dan 3 mg/L). Tiap perlakuan diulang sebanyak empat kali. Setelah dilakukan masa kultur selama enam minggu kalus ditimbang berat segar dan berat kering kemudian sampel kering diekstrak dengan metode maserasi menggunakan etanol absolut. Ekstrak sampel dianalisis kadar flavonoid melalui metode kolorimetrik termodifikasi menggunakan spektrofotometer UV-Vis dan metode kromatografi lapis tipis. Konsentrasi sukrosa 30 g/L dan eritrosa-4-fosfat 5 µM menghasilkan biomassa tertinggi dibandingkan perlakuan lain yaitu sebesar 0,672 ± 0,112 gram berat segar dan 0,033 ± 0,009 gram berat kering. Kadar flavonoid total tertinggi dihasilkan dari perlakuan sukrosa 30 g/L dan fenilalanin 3 mg/L yaitu sebesar 3633,4 ppm quercetin/gram berat kering dan 15777,8 ppm kaempferol/gram berat kering. Hasil analisis menggunakan metode kromatografi lapis tipis menampakkan warna noda sangat tipis yang mengindikasikan rendahnya senyawa flavonoid yang dihasilkan oleh kalus. Kesimpulan dari penelitian ini adalah variasi konsentrasi sukrosa, eritrosa-4-fosfat dan fenilalanin berpengaruh terhadap biomassa dan kadar flavonoid kalus daun sambung nyawa.

Kata kunci: biomassa kalus, eritrosa-4-fosfat, fenilalanin, kadar flavonoid, sukrosa

Aryana Nurisa. 2016, Effect of Combination Variation of Sucrose, Erythrose-4-Phosphate and Phenylalanine Concentration on Biomass and Flavonoid Content of Callus Cultures from Leaves of Sambung Nyawa (*Gynura procumbens* Merr.)
This study was supervised by Dr. Y. Sri Wulan Manuhara, M.Si and Dr. Alfinda Novi Kristanti, DEA, Department of Biology, Faculty of Science and Technology, Airlangga University, Surabaya.

ABSTRACT

The aims of this study were to know the effect of concentration variation of sucrose, erythrose-4-phosphate and phenylalanine on biomass and flavonoid content of callus cultures from leaves of sambung nyawa (*Gynura procumbens* Merr.). This study was experimental research with complete randomized design. Sucrose concentration (10 g/L, 30 g/L and 50 g/L) respectively were combined with erythrose-4-phosphate (0 µM, 2,5 µM and 5 µM) and phenylalanine (0 mg/L, 2 mg/L and 3 mg/L), each treatments were repeated four times. After six weeks in culture, fresh and dry weight of calli were measured and extracted with ethanol absolut. Crude extract ethanolic of callus was analyzed by using a modified colorimetric and thin layer chromatography method. 30 g/L of and 5 µM erythrose-4-phosphate gave the best yield of biomass (0,672 ± 0,112 gram of fresh weight and 0,033 ± 0,009 gram of dry weight). The highest total flavonoid content was attained in calli treated with 30 g/L of sucrose and 3 mg/L of phenylalanine (3633,4 ppm quercetin/gram dry weight and 15777,8 ppm kaempferol/gram dry weight). Analysis by using thin layer chromatography method showed weak stain color on chromatogram, it was indicated that calli had very low of flavonoid compound. It was concluded that concentration variation of sucrose, erythrose-4-phosphate and phenylalanine had affected on biomass and flavonoid content of callus cultures from leaves of sambung nyawa.

Keywords: callus biomass, erythrose-4-phosphate, flavonoid content, phenylalanine, sucrose